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Do Parents Reinforce Somatic Complaints in Their Children?

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Objective: To examine the influence of parental solicitousness on self-reported somatic complaints in school-age children. **Design and Main Outcome Measures:** Participants were 564 children (mean age 10 years) and their parents. Children completed self-report measures of somatic complaints, parental solicitousness, depressiveness, fear, and sense of coherence. Somatic complaints were assessed again 6 months later. Parents also completed a questionnaire about solicitousness. **Results:** Parental solicitousness as reported by children or parents was unrelated to the frequency of self-reported somatic complaints. Symptoms of depression, fear, and lower sense of coherence were associated with more somatic complaints, but did not interact with parental solicitousness. **Conclusion:** Parental solicitousness seems unrelated to more frequent somatic complaints in schoolchildren.

Keywords: parental reinforcement, secondary gain, somatic complaints, pain, child

Somatic complaints are a subjective experience (Edwards, Ness, Weigent, & Fillingim, 2003) and influences on reports of somatic complaints are thought to include psychological variables (Cohen & Herbert, 1996). From a behavioral perspective, Fordyce (1976) suggested that earlier positive environmental reactions to somatic complaints can increase the future frequency of the display of those complaints. His work has been influential in the literature about somatic complaints in adults (Patterson, 2005). Even though somatic complaints are common in children (Perquin et al., 2000), few studies have been focused on the reinforcement of children's somatic complaints. In this study we examined the possibility that children would report somatic complaints more frequently if they were followed by positive consequences provided by parents.

For children, parents are the ones who have most influence on the consequences of somatic complaints. For example, they can give their children extra treats or relieve them of chores: responses referred to as *parental solicitousness* (Peterson & Palermo, 2004). If parental solicitousness reinforces the self-report of somatic complaints in children, children who receive these positive consequences will be expected to report somatic complaints more frequently. This may not necessarily cause an increase of frequency in the frequency of a single complaint: parents may respond in similar ways to different somatic complaints and therefore, may

reinforce somatic complaints in their children. To date, the few studies evaluating the relationship between parental solicitousness and the frequency of a single (Levy et al., 2004; Peterson & Palermo, 2004) or various somatic complaints (Levy et al., 2004; Merlijn et al., 2003; Walker, Claar, & Garber, 2002) have not supported the hypothesis that somatic complaints can be reinforced by parental solicitousness. Levy et al. (2004) and Walker et al. (2002) focused on quite specific samples (8- to 15-year-olds having a mother diagnosed with irritable bowel syndrome or 8- to 18-year-olds reporting recurrent abdominal pain) and did not find an association between parental solicitousness and the frequency of somatic complaints. Peterson and Palermo (2004) found a negative relationship between solicitousness and somatic complaints in their more general sample of 8- to 16-year-olds with headaches, juvenile idiopathic arthritis, or sickle cell disease. Merlijn et al. (2003) showed that 12 to 18-year-olds with chronic pain experience less parental solicitousness compared to adolescents without chronic pain. Nevertheless, we argue there are several reasons for conducting further research to evaluate the theory and hypothesis.

First, the studies described above all included adolescents. This is problematic because parental solicitousness may only have a reinforcing effect on younger children's somatic complaints, whereas this effect diminishes as children's autonomy increases (Von Salisch, 2001). Second, when somatic complaints become chronic, parents may feel they should respond less solicitously. For example, keeping a child home from school for a couple of days may be considered harmless, but longer periods of absence are likely to cause academic and social problems. Thus, as long as the complaints remain within the normal range, a positive association with parental solicitousness may be more likely than when the frequency of the somatic complaints is extreme. This nonlinear relationship between solicitous responses and somatic complaints has not been studied. Third, it has been suggested that negative

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affect moderates the relationship between parental solicitousness and the self-reporting of somatic complaints (Walker et al., 2002; Peterson & Palermo, 2004). When experiencing negative affect, physiological changes take place that facilitate our reactions. Yet, when people experience intensive or long-term negative affect, they report more somatic complaints (Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996). In children, symptoms of depression, anxiety and a low "sense of coherence" (the feeling that life is manageable, comprehensible, and meaningful) are related to more somatic complaints (Campo et al., 2004; Jellesma, Rieffe, Meerum Terwogt, & Kneepkens, 2006; Muris & Meesters, 2004; Torsheim, Aaroe, & Wold, 2001). Perhaps, only children who are more susceptible to somatic complaints because of negative affect are influenced by parental solicitousness.

This study had four objectives. First, we examined the relationship between parental solicitousness and somatic complaints in a population of schoolchildren, ages 9 to 12. The somatic complaints score was a compound of the frequency of a variety of somatic complaints that are common in children. Second, to assess the possible nonlinearities of the data, we compared parental solicitousness for children with scores in the low, medium, or high range in terms of frequency of somatic complaints. Third, we evaluated moderation of depression, fear, and low sense of coherence. Fourth, in order to examine the causal effect of parental solicitousness on the frequency of children's reported somatic complaints, we conducted a longitudinal study using a time interval of six months.

Method

Participants and Procedure

Participants were 564 children and their parents, who were taking part in a larger longitudinal study of somatic complaints in children among 11 randomly selected primary schools in the Netherlands. Of the potential sample, 79% of the parents chose to participate. Two waves of data, separated by 6 months were used (1% participant loss due to change of school). Participants were 255 girls and 309 boys, *M* age 10 years and 3 months at Time 1 (range 9 to 12), 88% living in a 2-parent family and 92% having the Dutch ethnicity. The questionnaires were handed out to children in classrooms. Children took the parents' questionnaires home, and they were returned by self-addressed return envelopes. Written (parental) informed consent was obtained before beginning this study.

Measures

Solicitous parental responses. The Illness Behavior Encouragement Scale (IBES; Walker & Zeman, 1992; Bijttebier & Vertommen, 1999) measures children's and parents' perceptions of parents' responses to children when children have somatic complaints. There are two parallel forms for parents and their children. The questionnaire consists of 12 responses to somatic complaints, for example: *spend more time with the child than usual* and *let the child do things he or she isn't usually allowed to do*. Children and their parents rate how often the parent responded this way on a 5-point scale, 0 (*never*) to 4 (*always*). To prevent biases related to specific complaints, we asked about parents' responses

when the child was not feeling well. Walker and Zeman reported a good internal consistencies for the child and mother report scales for gastro-intestinal complaints ($\alpha = .88$ and $\alpha = .85$, respectively). Internal consistencies of the more general scales were satisfactory ($\alpha = .74$ and $\alpha = .71$, respectively).

Somatic complaints. We assessed children's somatic complaints with the Somatic Complaint List (SCL; Rieffe, Oosterveld, & Meerum Terwogt, 2006). This questionnaire contains 14 items that reflect common somatic complaints in children, such as abdominal pain and fatigue. Children indicate how often they have experienced the somatic complaints in the four weeks prior to the assessment on a 5-point scale from 0 (*almost never*) to 4 (*almost always*). Internal consistency reported by Rieffe et al. is strong ($\alpha = .77$) as was reliability we found in the current study ($\alpha = .85$).

Depressive symptoms. Children completed the Children's Depression Index (Kovacs, 1992; Timbremont & Braet, 2001). The CDI consists of 27 items; the item concerning suicidal thoughts was excluded. For each item, children selected one of three statements that characterized them best during the past three weeks. The statements were graded in order of increasing severity from 0 to 2. The internal consistency of the scale is known to be good ($\alpha = .80$) just as the test-retest reliability ($r = .81$; Timbremont & Braet, 2001). Internal consistency in this sample was .81.

Fear. The Revised Fear Survey Schedule for Children (FSSC-R; Ollendick, 1983; Oosterlaan, Prins, & Sergeant, 1995) was used to determine the level of children's fearfulness. The FSSC-R contains 80 items on a 3-point scale, 0 (*not at all*) to 2 (*very much*), for how much they fear specific stimuli or situations. Subscales can be distinguished. However, in this study, only the total score was used. Research shows the scale has a good internal consistency (α is approximately .90 for all subscales) and high test-retest reliability (Pearson's r around .70; Oosterlaan et al., 1995). Oosterlaan et al. (1995) also reported support for convergent as well as divergent validity. We found an internal consistency of .97 for the total score.

Sense of coherence. Children's experience of sense of coherence was measured using the Sense of Coherence scale (Jellesma, Meerum Terwogt, & Rieffe, 2006; Torsheim et al., 2001). The scale consists of 13 items. Children are asked to respond to statements on a 7-point scale from 1 (*almost never*) to 7 (*almost always*). Torsheim et al. (2001) reported a good internal consistency ($\alpha = .85$) and test-retest reliability ($r = .78$); similar results were found for the Dutch translation (Jellesma et al., 2006). In the current study we found an internal consistency of .76.

Statistical Analysis

For comparison of somatic complaints at Time 1 (T1) and Time 2 (T2) and solicitousness (T1), *t* tests were used. For gender differences in somatic complaints and parental solicitousness multivariate analysis of variance with post hoc *t* tests were used. Pearson product-moment correlations (Bonferroni corrected) were computed for parental solicitous responses, depression, fear, sense of coherence, and somatic complaints. We also compared three groups of 56 children: those who scored within the 0–10th (with a score below 1.21), 45th–55th (with a score between 1.64 and 1.79), and 90th–100th percentile on the SCL (with a score above 2.64).

A nonlinear relationship would be indicated by a difference between two groups.

Next, a stepwise linear regression analysis was conducted to test the possibility that the effect of solicitous parental responses on children's somatic complaints was moderated by depressive symptoms, fear symptoms, or sense of coherence. To reduce problems associated with multicollinearity and to facilitate interpretation of the effects of predictors and moderators, we standardized the variables (Frazier, Tix, & Baron, 2004). Parental solicitous responses as perceived by the child and parent, the possible moderator variables, and the interactions between parental solicitousness and the moderator variables were entered in three steps. Entering all of the moderator effects in a single step, after the predictor and moderator variables, has the advantage of controlling for an inflated Type I error (Frazier et al., 2004).

A second stepwise linear regression analysis was conducted to examine whether changes in self-reported somatic complaints (i.e., somatic complaints at T2 minus somatic complaints at T1) are influenced by the initial level of somatic complaints, parental solicitousness, negative affect or sense of coherence. The variables were standardized. Somatic complaints at T1, parental solicitousness as perceived by children and parents, negative affect, and interactions with somatic complaints at T1 were entered in four steps. When one variable contains part of another variable and the two variables are then analyzed using regression testing, the null hypothesis that the slope of regression is zero becomes inappropriate. We corrected for this problem, known as *mathematical coupling*, when analyzing the relationship between change and initial value (Tu, Baelum, & Gilthorpe, 2005). For the interpretation of both stepwise linear regression analyses, the nonstandardized regression coefficients were used, as the β coefficients for the interactions are not properly standardized.

Results

Scores on Somatic Complaints and Parental Reinforcement

Children had a mean score of 1.83 ($SD = 0.58$, range 1.00–3.86) on the somatic complaint list at T1 and a slightly higher score of 1.90 ($SD = 0.57$, range 1.00–4.89) at T2, $t(557) = -3.27$, $p < .01$. The mean score of children on the IBES was 1.79 ($SD = 0.59$,

range 0.42–3.83). Parents reported somewhat less solicitousness, with a mean score of 1.64 ($SD = 0.48$, range 0.25–3.33), $t(563) = 5.23$, $p < .01$. There were small gender differences, Hotelling's Trace = .03, $F(4, 553) = 4.00$, $p < .01$, partial $\eta^2 = .03$. Girls reported more parental solicitousness ($M = 1.86$, $SD = 0.55$) than boys ($M = 1.73$, $SD = 0.61$), $t(562) = 2.70$, $p < .01$. Girls also reported more somatic complaints than boys at both times, $M = 1.90$, $SD = 0.61$ versus $M = 1.76$, $SD = 0.53$, $t(562) = 2.87$, $p < .01$ at T1 and $M = 1.95$, $SD = 0.56$ versus $M = 1.86$, $SD = 0.56$, $t(556) = 2.05$, $p = .04$ at T2. There was no gender effect for parental reinforcement reported by parents.

Relationships Between the Variables

As expected, somatic complaints were positively related to symptoms of depression, fear, and control over life. Parental solicitousness, however, was unrelated to somatic complaints or any of the other variables. There was a small correlation between parental solicitous responses as perceived by children and their parents (see Table 1).

Parental Reinforcement for Children With Few, Moderate, or Many Somatic Complaints

The mean scores and standard deviations of the three selected groups on somatic complaints and parental solicitousness by children and their parents are presented in Table 2. There was no difference between the groups in parental solicitousness, Wilk's $\lambda = .99$, $F(4, 328) = 0.59$, $p = .67$, partial $\eta^2 = .01$.

Prediction of Somatic Complaints Reported at T1

Parental solicitous behavior in response to children's somatic complaints was unrelated to the somatic complaints score. More depression, fear, and less sense of coherence all predicted more somatic complaints, as would be expected, but failed to make the children more prone to reinforcing effects of parental solicitousness. Higher order interactions, including 3- and 4-way interactions were evaluated, revealing no significant interaction effects. Separate analyses for boys and girls gave similar results. Results are presented in Table 3 (interaction and gender effects not shown).

Table 1
Correlations Between Somatic Complaints, Parental Solicitousness, Negative Affect, and Experienced Control Over Life

Variable	2	3	4	5	6	7
1. Somatic complaints (T1)	.03 ^a	-.06 ^b	.39*	.34*	-.39*	.55*
2. Children's perception of parental solicitousness (T1)		.17*	-.07	.12*	.09	.01
3. Parents' perception of parental solicitousness (T1)			.05	-.00	.02	-.05
4. Depressive symptoms (T1)				.22*	-.58*	.35*
5. Fear (T1)					-.26*	.27*
6. Control over life (T1)						.27*
7. Somatic complaints at T2 (6 months later)						

^a Identical correlations for pain (e.g., abdominal pain) and non-pain symptoms (e.g., fatigue). ^b $r = -.06$ for pain and $r = -.04$ for non-pain symptoms.

* Correlation significant at $\alpha = .05/21$.

Table 2

Mean Scores and Standard Deviations on Somatic Complaints and Parental Solicitousness of Children That Score Within the Percentiles of 0–5, 45–55, and 90–100 on Somatic Complaints

Group (based on somatic complaints)	Somatic complaints <i>M (SD)</i>	Parental solicitousness reported by child <i>M (SD)</i>	Parental solicitousness reported by parent <i>M (SD)</i>
0–5th percentile	1.08 (0.06)	1.80 (0.70)	1.66 (0.44)
45–55th percentile	1.71 (0.05)	1.91 (0.55)	1.72 (0.55)
90–100th percentile	3.01 (0.34)	1.84 (0.65)	1.59 (0.49)

Note. No significant differences in parental solicitousness were found for the three groups.

Prediction of the Difference in Somatic Complaints Reported at T1 and T2 (6 Months Later)

There was a strong, but not completely stable association between somatic complaints at T1 and T2 (see Table 1). After correction for mathematical decoupling, it is clear that the initial value of somatic complaints were not significantly related to changes in somatic complaints, $z = 0.50$, $p = .62$. There was positive association between fear and depression at T1 and increases in somatic complaints at T2. There was no association between parental solicitousness and change in somatic complaints, nor were there any interactions with the level of somatic complaints at T1. Higher-order interactions were all insignificant. Separate analyses for boys and girls gave similar results. Results are presented in Table 4 (interaction and gender effects not shown).

Discussion

In recent years, the possibility that parents reinforce somatic complaints in their children by behaving solicitously has received increasing attention. Previous studies that included adolescents did not confirm this hypothesis. Surprisingly, we also found no evidence for these effects. There was no positive relationship between children's reports of somatic complaints and parental solicitousness reported by parents or children. There also was no difference in parental solicitousness for children with a low, medium, or high score on the frequency of somatic complaints. In contrast, negative affect was related to somatic complaints, but did not moderate the relation between parental solicitousness and children's reports of somatic complaints. Thus, even for children who are vulnerable to

developing somatic complaints, positive consequences provided by parents do not encourage children to reporting somatic complaints more often. This was confirmed by results showing that changes in reports of somatic complaints 6 months later were unrelated to initial parental solicitousness. Fear and symptoms of depressiveness were associated with an increase in somatic complaints.

From previous studies, it seems that in older children, there is a negative relationship between somatic complaints and parental reinforcement (Merlijn et al., 2003; Peterson & Palermo, 2004). As Merlijn et al. (2003) suggests, the family may have grown accustomed to the adolescent's somatic complaints. In addition, parents of adolescents may have a different interpretation of frequent somatic complaints compared to parents of schoolchildren. For example, knowing that truancy and school dropout are more prevalent during this developmental period (Eccles, 1999), parents of adolescents may worry about frequent somatic complaints. More research is needed to shed light on developmental factors that may explain the fact that somatic complaints are unrelated to parental solicitousness in schoolchildren, whereas more chronic pain complaints are associated with less parental solicitousness in adolescents.

In sum, parental solicitousness does not appear to cause an increase in children's and adolescents' somatic complaints. Nevertheless, solicitousness and somatic complaints may be related in different ways. Peterson and Palermo (2004) found that parental solicitousness is associated with parents' perceptions of children's somatic complaints. Perhaps parents adjust their responses and become more solicitous when they think that their child requires more care. This idea is supported by the finding that mothers who

Table 3

Stepwise Linear Regression of Somatic Complaints on Parental Solicitousness, Depression, Fear, and Sense of Coherence

	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 1				.01
Children's perception of parental solicitousness	.03	.03	.05	
Parents' perception of parental solicitousness	-.04	.03	-.07	
Step 2				.25***
Children's perception of parental solicitousness	.03	.02	.05	
Parents' perception of parental solicitousness	-.04	.02	-.08*	
Fear	.13	.02	.23***	
Depressive symptoms	.13	.03	.23***	
Sense of coherence	-.11	.03	-.20***	

* $p < .05$. *** $p < .001$.

Table 4

Stepwise Linear Regression Analysis of Changes in Somatic Complaints on the Initial Level of Somatic Complaints, Parental Solicitousness, Depression, Fear, and Sense of Coherence

	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 1				.24***
Initial level of somatic complaints ^a	-.27	.02	-.49***	
Step 2				.00
Initial level of somatic complaints	-.27	.02	-.49***	
Children's perception of parental solicitousness	-.00	.02	-.00	
Parents' perception of parental solicitousness	-.01	.02	-.01	
Step 3				.03***
Initial level of somatic complaints	-.31	.02	-.58***	
Children's perception of parental solicitousness	.00	.02	.00	
Parents' perception of parental solicitousness	-.02	.02	-.03	
Fear	.05	.02	.09*	
Depressive symptoms	.09	.03	.17***	
Sense of coherence	.02	.03	.04	

^a $\Delta t = 6$ months.

* $p < .05$. *** $p < .001$.

appraise somatic complaints in their children as more bothersome are more likely to respond solicitously to these complaints (Levy et al., 2004). Combined with the finding that parental solicitousness does not have a reinforcing effect, such an adjustment of parental behavior may be appropriate, as long as parents make a good evaluation of their children's somatic complaints and discomfort.

There are other processes within the family that might influence children's reports of somatic complaints. Modeling and overprotection are possible examples (Garralda, 1996). Children's cognitions and behavior with respect to somatic complaints may be influenced by what children observe in their immediate surroundings, rather than by the consequences of reporting somatic complaints. Future studies could focus more on these influences.

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